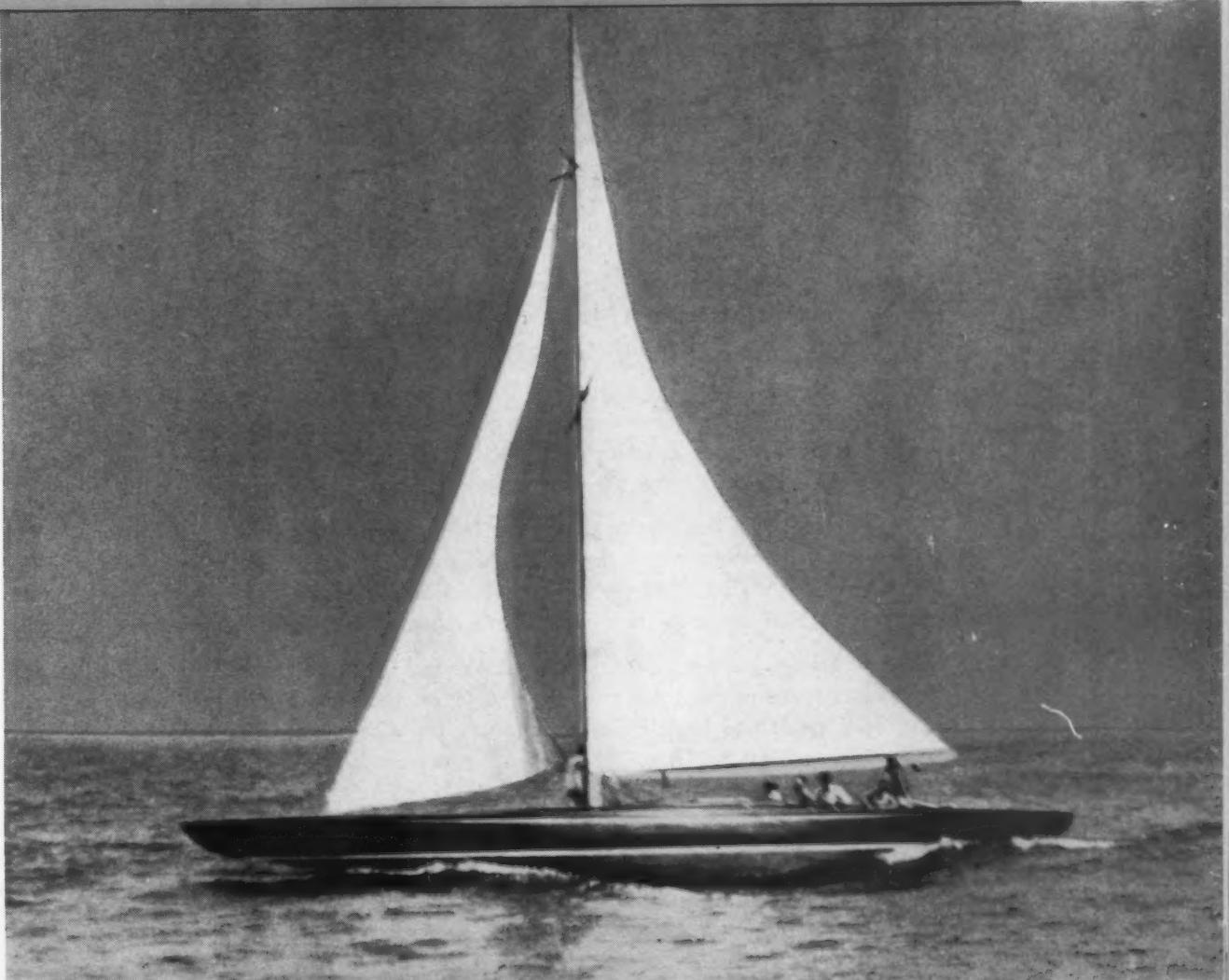


SEP 7 1939



American Foundryman

A PUBLICATION PRESENTING ASSOCIATION AND CHAPTER ACTIVITIES



Foundryman Wins Classic Mackinac Race (See page 7)

1940 Convention in Chicago, See Page 2—Code on Metal Cleaning Sanitation, See Page 3—Regional Foundry Conference, See Page 5—Safety and Hygiene Program for Small Foundries, See Page 10.

September
1939

The Open House and Public Relations



A WELL PLANNED Open House, in our opinion, is an ideal method of establishing better public relations in the community. Much of our enthusiasm for an Open House comes from actually seeing the idea work.

Many people in the community have a mistaken impression of a foundry and its working conditions. They base their ideas of a foundry on conditions which may have existed years ago.

Obviously there is only one way of correcting this impression—let the people see for themselves. Let them see that a great deal of thought and considerable money has been spent in bettering working conditions and largely eliminating the hazards of accidents and occupational diseases. Let them know that the average foundry is safer than the average city.

We found, too, that the families of the employees were happy to see where father or husband worked and that the employee, in turn, got quite a "kick" out of explaining his job to the family. It is hardly necessary to add that the families of the employees are, after all, a part of the public and have a certain influence on the thinking of merchants and professional people in the community.

In the first sentence we mentioned a **well planned** Open House and we should like to stress again the importance of adequate planning. An Open House means more than merely throwing wide the front gates and letting the townspeople in. Weeks, yes, even months of planning are necessary if you expect an Open House to achieve the results you have in mind.

A handwritten signature in cursive ink, appearing to read "W.H. Doerfner".

W. H. Doerfner,
Director, A.F.A.

Mr. Doerfner, a director of A.F.A., is general manager, Saginaw Malleable Iron Division, General Motors Corporation, Saginaw, Mich. Joining this organization in 1918 as timekeeper, he has advanced through his ability to his present position. In his work he saw the need for establishing better public relations with the community in which his plant is established. The 1938 Open House of the Saginaw Malleable Iron Division was described on page 4, January, 1939, issue of American Foundryman.

A. F. A.
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Plainville Casting Co., Plainville, Conn.

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+

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♦

***Headquarters**

Room 1198, 222 West Adams St., Chicago, Ill.



American Foundryman

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1940 Convention and Exhibition in Chicago

THE Board of Directors has accepted the invitation from Chicago strongly supported by the Chicago Chapter to hold its 1940 Convention in this city, May 6 to 10 inclusive. In conjunction with the Convention there will be a Major Exhibit of Foundry Equipment and Supplies in the exhibit halls of the International Amphitheater of the Union Stock Yards and Transit Company. This will be the first exhibition of the Association since the one held in Cleveland in 1938, and the first major exhibit in Chicago since 1914.

Held in a leading foundry center it is expected that the convention will exceed, in interest and

attendance, any previous annual meeting. Committees of the Chicago Chapter and of the Association are already being planned to provide plant visitation and technical sessions of the highest order. The daytime sessions will be held in the meeting rooms of the Stock Yards Inn, Saddle & Sirloin Club and the Amphitheater. Evening meetings will be held at the Palmer House which will be headquarters hotel.

The Exhibition will open Saturday noon, May 4, continuing through the evening, will be closed Sunday and reopen Monday, May 6, concurrently with the 44th Annual Convention.

Board Holds Annual Meeting

THE annual meeting of the Board of Directors was held July 26 at the Palmer House, Chicago, with President H. S. Washburn presiding. An exceptionally complete attendance was recorded, there being only two directors absent. One of the important items of business transacted was the decision to hold the 1940 annual convention with a major exhibit at Chicago. This item is reported more fully elsewhere in this issue of *American Foundryman*.

The appointment of the sala-

ried officers of the Association was held with the reelection of the present staff as follows: Executive Vice President and Manager of Exhibits, C. E. Hoyt; Secretary, R. E. Kennedy; Treasurer and Director of Safety and Hygiene, E. O. Jones; Technical Secretary, N. F. Hindle, and Assistant Secretary-Treasurer, Jennie Reininga.

Reports of the officers covering the year's activities were presented and discussed. Membership in the Association was shown to exceed that of any pre-

vious year. Chapters, first started in 1934, now number 17, three having been organized during the past year, these being Michigan (South Bend area), Central New York (Syracuse area) and the Cincinnati District. Other foundry centers were reported as being good prospects for organization during the coming year.

In addition to regular items of business such as financial reports and budget consideration, the Board approved for publication a "Code of Recommended Good Practices for Metal Cleaning Sanitation," submitted by the Committee on Industrial Hygiene Codes under the Chairmanship of Jas. R. Allan, International Harvester Co., Chicago, and "Tentatively Recommended Standards for Patternmaking Apprentice Training," as submitted by a Committee under the Chairmanship of B. B. Wittfoht, Caterpillar Tractor Co., Peoria.

Committees were authorized to promote sustaining membership, develop a program of cupola research and sponsor a castings exhibit and session at the Machine Tool Show and Congress to be held in Cleveland in October. President Washburn and Executive Vice President Hoyt were delegated to visit the west coast

BOARD OF DIRECTORS LUNCHEON GROUP

A luncheon of the Board of Directors held July 26 at the Palmer House, Chicago, brought together an almost 100 per cent attendance of directors and officers. With C. J. P. Hoehn and George Seyler the only directors absent, the others shown above are: (seated, reading from left around table) D. P. Forbes; F. J. Walls; Jennie Reininga, assistant secretary-treasurer; H. S. Hersey; A. Walcher; O. A. Pfaff; C. R. Culling; H. Bornstein; W. H. Doerfner; C. E. Hoyt, Executive Vice President; President Washburn; W. J. Hennessey, Manager, Convention Bureau, Chicago Association of Commerce and luncheon host; Vice President L. N. Shannon; Jas. R. Allan, past director; E. O. Jones, Treasurer; H. B. Hanley; Thomas Kaveny; Marshall Post; C. E. Westover, Chairman, Chicago Chapter; (standing) N. F. Hindle, technical secretary; W. B. Coleman; James L. Wick, Jr.; R. E. Kennedy, secretary; and L. W. Olson, past president.



chapters in February at the time of a regional foundry conference which is to be held in connec-

tion with the annual meeting of the California Iron and Steel Industry at Del Monte.

Foundry Industry to Display Castings at Machine Tool Show

WHILE the 1939 Machine Tool Show to be staged in the Cleveland Exhibition Hall October 4-13, under the auspices of the National Machine Tool Builders' Association, will display castings in many forms as parts of machine tools, the exhibit will be of significant importance to the foundry industry as the American Foundrymen's Association in co-operation with the several foundry trade societies will have a well located booth to show castings applications.

At the Machine Tool Show in 1935 two foundries had exhibits of castings with results so satisfactory as to prompt them to be among the first to reserve space for the 1939 Machine Tool Show. When the executive secretary of A. F. A. visited the last Machine Tool Show and discussed results with presidents of the two casting exhibitors he was prompted to address a letter to the A. F. A. Board of Directors, pointing out that producers of castings should be encouraged to exhibit more frequently on occasions of this kind, saying that in addition to these two exhibits the Machine Tool Show itself was one of the finest casting exhibits that had ever been staged.

In the fall of 1938, the Exhibit Committee of the Machine Tool Show asked the co-operation of the American Foundrymen's Association in making available the services of A. F. A. Manager of Exhibits, C. E. Hoyt, as a consultant and adviser in planning their show and as show manager in staging the show. In the negotiations which followed it was agreed that in addition to financial compensation to the A. F. A. for the service of its show manager, space should also be made available for castings exhibits.

The heavy demand for space

on the part of members of the N.M.T.B.A. made it impossible to secure space for other individual foundry exhibitors than the two who exhibited at the previous show, but a wall space having a frontage of 81 feet in a good location in Exhibition Hall was set aside for the American Foundrymen's Association for a castings exhibit.

With this space available, A.F.A. sought and received the co-operation of trade organiza-

tions of the foundry industry and so it is that the Gray Iron Founders' Society, Malleable Founders' Society, Ohio Division of the Steel Founders' Society and the Non-Ferrous Division of A.F.A. are sponsoring castings exhibits for their respective groups, while A.F.A. occupying a center space will portray casting progress and general applications of castings in industry.

Many of the members of N.M.T.B.A. are members of A.F.A. Because of this close affiliation the Machine Tool Show is a logical and timely opportunity for presenting the utility and application of castings not only to machine tool builders but to that far greater audience, machine tool buyers who attend the show.

Code on Metal Cleaning Sanitation Completed

THE Association's Committee on Industrial Hygiene Codes has completed and had approved for publication a fourth code in its series. This fourth code, entitled "Recommended Good Practice Code for Metal Cleaning Sanitation," has been published in planograph form for distribution.

The subject matter in this fourth code covers recommended practices and installations for alkaline, solvent, solvent degreasing, metal pickling, tumbling mill and abrasive blasting cleaning processes, as well as pertinent information on metal cleaning generally for the prevention of accidents and minimizing exposure to occupational disease. As far as the committee has been able to determine, this is the first time that definite engineering recommendations have been published dealing directly with the hazards involved.

The section on *Solvent Degreasing Processes* should be very helpful to those considering the newer methods of cleaning by chlorinated hydrocarbons. The *Abrasive Blasting Cleaning Processes* section is timely be-

cause it is applicable to old as well as new installations for exhaust and accident prevention requirements.

While the use of tumbling mills is old in most plants today, all types of mills are included in the code, including continuous mills as well as stave, internally and externally ventilated types of batch loaded mills. An effort has been made to provide more adequate exhaust system requirements to carry the dust and dirt to the dust collection equipment and prevent its dropping to the mill floor, where further dust hazards are introduced in its disposal.

The Code material can be used to advantage by those purchasing and installing new equipment or renovating old equipment and by vendors of equipment and it should afford the essential information that might be included in industrial codes of regulatory bodies.

The codebook consists of 42 pages, is illustrated with diagrams and is priced at \$2.50 per copy, to non-members, and \$1.25 to members.

The material for the code has

been some two years in preparation by members of the committee, as well as numerous conferees having special knowledge on the matter. The personnel of the committee is as follows:

Chairman: J. R. Allan, International Harvester Co., Chicago, Ill.

R. J. Aldrich,* Sloan Valve Co., Chicago, Ill.

F. H. Amos, International Harvester Co., Chicago, Ill.

E. E. Birkland, Crane Co., Chicago, Ill.

C. P. Guion, W. W. Sly Mfg. Co., Chicago, Ill.

Carl F. Larsson, American Air Filter Co., Chicago, Ill.

Nathan Lesser, Deere & Co., Moline, Ill.

John G. Liskow, Claude B. Schneible Co., Chicago, Ill.

R. W. McCandlish, Research Corp., Chicago, Ill.

S. McMullan, Western Electric Co., Cicero, Ill.

Secretary: E. O. Jones, American Foundrymen's Association, Chicago, Ill.

Conferees: C. S. Anderson, Belle City

Malleable Iron Co., Racine, Wis.
George Boesger, W. W. Sly Mfg. Co., Cleveland, Ohio.

W. K. Clayton, Central Chemical Div. of Wilson & Co., Calumet, Ill.

O. L. Coffey, Whiting Corp., Harvey, Ill.

John W. Demmers, G. S. Blakeslee & Co., Cicero, Ill.

J. O. Houze, National Malleable & Steel Castings Co., Cicero, Ill.

Geo. M. Howard, N. Ranshoff, Inc., Cincinnati, Ohio.

M. Marean, E. I. DuPont de Nemours Co., Wilmington, Del.

T. R. McElhinney, Shell Petroleum Corp., Chicago, Ill.

O. T. Nelson, Wisconsin Industrial Commission, Madison, Wis.

Lamar Peregoy, Sivyer Steel Casting Co., Milwaukee, Wis.

E. J. Potter, Pangborn Corp., Hagerstown, Md.

L. C. Stokes, Dept. of Labor, State of Illinois, Chicago, Ill.

C. S. Tompkins, J. B. Ford Sales Co., Chicago, Ill.

D. C. Turnbull, American Foundry Equipment Co., Mishawaka, Ind.

Ronald Webster, Hydroblast Corp., Chicago, Ill.

*Deceased.

combine the individual experiences of those interested in or engaged in training pattern makers, a sub-committee of the A.F.A. Apprentice Committee was appointed to present suitable recommendations. This sub-committee is under the chairmanship of B. B. Wittfoht, Apprentice Supervisor, Caterpillar Tractor Company, Peoria. Serving with Mr. Wittfoht are J. E. Kemp, Walworth Co., Kewanee, Ill.; J. R. Van Kooy, Milwaukee Vocational School; W. H. Ruten, University of Nebraska, Lincoln, Nebr.; Frank Cech, Pattern Instructor, Cleveland Trade School, and Wayne Stettbacher, Employers' Association of Detroit.

This report is similar in form to the Standards of Four-Year Foundry Apprenticeship developed several years ago by the Apprentice Committee. The pattern making report is divided into three parts—

(A) Fundamentals of Apprenticeship.

(B) Pattern Making Apprenticeship Standards and

(C) General Suggestions

Attached to the report are sample forms of apprentice contracts. Under Fundamentals the Committee discusses management, supervision, number of apprentices and stabilization of employment. Under Pattern Making Apprenticeship Standards, the report defines apprentices and lists the points to observe in the selection of apprentices, such as entrance requirements, tests, physical and mechanical abilities. Other factors specified are (a) length of apprenticeship, (b) probationary period, (c) apprenticeship agreement, (d) schedules of shop practice and four year courses for wood and metal pattern making apprenticeships.

The section under general suggestions goes into detail regarding attracting interests, schedules, planning lessons, etc.

The appreciation of the Association is due the various committee workers who have devoted their time to the preparation of this report, especially so in the case of Mr. Wittfoht, who was mainly responsible for working out the details of the recommendation.

Castings Session for Machine Tool Congress

A MOST important technical event this fall is the staging of a Machine Tool Congress to be held in connection with the 1939 Machine Tool Show in Cleveland. The various societies allied with the machine tool industry have been invited to organize evening sessions for the presentation of technical and management lectures. The American Foundrymen's Association is co-operating with the Northeastern Ohio Chapter in organizing a session on "Castings and Industry." This will be held at the Hotel Hollenden, the evening of October 9, with three speakers on the program. Dr. Harry A. Schwartz, National Malleable & Steel Castings Company, will first discuss the gen-

eral field of castings applications. He will be followed by A. C. Denison, Fulton Foundry & Machine Company, and James Thomson, Continental Roll & Steel Foundry Company, who will emphasize the industrial applications of gray iron and steel castings respectively.

Other societies co-operating in staging sessions for the Congress which is being sponsored by the National Machine Tool Builders' Association are the Cleveland Engineering Society, American Society of Tool Engineers, National Electrical Manufacturers Association, Society of Automotive Engineers and the American Society of Mechanical Engineers.

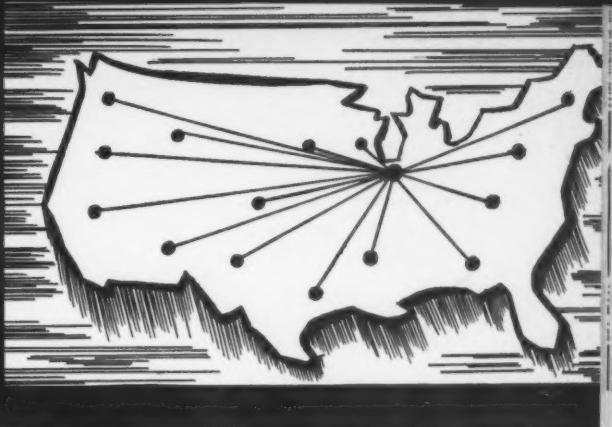
Standards for Pattern-making Apprenticeship

ADDING to the many reports which it has presented on the general subject of apprentice training, the A.F.A. Apprentice Training Committee at its meeting at the Cincinnati convention approved a report on standards for pattern apprenticeship. This report was passed on by the Board of Directors at its meet-

ing July 26 and approved for publication as "Tentatively Recommended Standards of Pattern Making Apprenticeship." Copies may be obtained on request by members of the Association writing in to headquarters.

Some three years ago, in response to many requests for information and in an attempt to

Chapter Activities



Baltimore-Washington Regional Foundry Conference October 20 and 21

FOUNDRYMEN of the Maryland - Washington - Virginia area will this fall have a chance to participate in a regional foundry conference of a type which has become so popular throughout the midwest during the past few years. The conference is being planned at the request of many members of the territory who have felt the need of group technical meetings for the many shop executives of foundries.

The tentative plans developed by a committee which first met during the Cincinnati convention provide for a two-day meeting, Friday and Saturday, October 20 and 21. The conference will be held at the Lord Baltimore Hotel, Baltimore, Md. A conference committee is being organized under the direction of Paul S. Lane, American Hammered Piston Ring Division, Koppers Co., Baltimore. Tentative plans call for several sessions to discuss the more practical problems of foundry operations and plant visitations to some of the industrial firms of chief interest to foundrymen. The tentative schedule of events is as follows:

Friday, October 20

- Registration: Lord Baltimore Hotel.
9:30-10:00—Opening Meeting.
10:30-12:00—(a) Gray Iron Shop Course—*Cupola Practice*.
(b) Non-Ferrous Shop Course—*Bronze Melting Problems*.
12:30- 2:00—Round Table Luncheon—*Steel and Malleable Problems*.
2:00- 4:00—Gray Iron Shop Course — *Alloyed and High Test Cast Iron*.
4:00- 5:00—The Microscope in Elementary Cast Iron Metallurgy.
6:30—Conference Dinner.
8:00—Sand Control—*Gray Iron, Non-Ferrous, Steel*.

SEPTEMBER, 1939

Saturday, October 12

- 10:00-12:00—Gating and Risering—*Cast Iron and Non-Ferrous*.
12:30- 2:00—Round Table Discussion—*Cupola Maintenance*.
2:00- 4:00—Information Please? —Open Forum, Answering of written and oral questions on various foundry problems.
4:00- 5:30—The Microscope in Elementary Cast Iron Metallurgy.

The tentative conference committee organization is as below:

Executive

- Chairman: Paul Lane, American Hammered Piston Ring Div., Baltimore, Md.
Vice Chairman: J. E. Crown, Naval Gun Factory, Washington, D. C.
Max Kuniansky, Lynchburg Foundry Co., Lynchburg, Va.
C. M. Saeger, Jr., Bureau of Standards, Washington, D. C.
Ed. Horlebein, Gibson & Kirk Co., Baltimore, Md.
Ed. R. Hall, Koppers Co., Baltimore, Md.
Frank Kennedy, Kennedy Foundry Co., Baltimore, Md.

Meetings

- Chairman: W. C. Frantz, Flynn and Emrich Co., Baltimore, Md.
R. T. Covington, American Hammered Piston Ring Div., Baltimore, Md.
J. C. Pendleton, Newport News Shipbuilding & Drydock Co., Newport News, Va.
L. H. Fawcett, Naval Gun Factory, Washington, D. C.

Plant Visitations

- H. Schaufus, Rustless Iron & Steel Co., Baltimore, Md.

Skyline view of Baltimore—Where first Baltimore-Washington Regional Foundry Conference will be held October 20 and 21.



H. B. Gardner, Bureau of Standards, Washington, D. C.
A. Reese, American Hammered Piston Ring Div., Baltimore, Md.

Reception and Registration

- Chairman: James J. Lacy, James J. Lacy Co., Baltimore, Md.
S. W. Brinson, Navy Yard, Washington, D. C.
C. W. Knobeloch, Bartlett Hayward Div., Baltimore, Md.
Frank Flynn, Kennedy Foundry Co., Baltimore, Md.

Dinner and Entertainment

- H. E. George, American Hammered Piston Ring Div., Baltimore, Md.
W. W. Levi, Lynchburg Foundry Co., Lynchburg, Va.
C. L. Frear, Bureau of Engineering, Navy Dept., Washington, D. C.

Detroit Chapter Holds Summer Outing

By O. E. Goudy,* Detroit, Mich.

THE Detroit Chapter following the practice of past years is holding monthly summer golf outings. The one in July was held on the 20th at the Tam-O-Shanter Country Club. The golfing was followed by an appetizing chicken dinner in the club house, during which several out-of-town guests from Flint and Toledo were introduced. After the passing out of the prizes it was unanimously voted to hold the next outing August 17 at Brooklands Country Club.

*Kelsey Hayes Wheel Co. and Detroit Chapter Reporter.



Carondelet Foundry, One of the Plants on St. Louis Conference Visitation List

St. Louis Chapter Organizes Committee for Regional Conference

DETERMINED to make its Fall foundry conference one of the best held by any chapter, the St. Louis Chapter officers have for some time had an extensive group of committees working on the various details of the meeting which is to be held October 6 and 7 at the Jefferson Hotel, St. Louis. The general committee is under the able chairmanship of Louis J. Desparois, Pickands Mather & Co. The program as shown in this issue has been developed to cater to the interests of the many shop men of the district, and by holding the meeting in St. Louis, it is expected that the attendance will be several times larger than for the previous fall conferences held at Rolla, Mo. That this expectation will be justified is indicated by an advance registration of over 200 early in August.

The personnel of the committees is as follows:

General Conference Committee
Chairman, L. J. Desparois, Pickands Mather & Co.

Publicity and Finance

Chairman: J. W. Kelin, Federated Metals Div., American Smelting & Refining Co.
R. K. Durkan, M. W. Warren Coke Co.
W. L. Heckmann, National Art Bronze Co.
C. B. Shanley, Semi-Steel Casting Co.
J. H. Williamson, Key Co., East St. Louis, Ill.

Registration and Arrangements

Chairman: H. E. Goodwin, The Medart Co.
P. W. Kluge, Tower Grove Foundry Co.
H. Sanders, American Foundry & Mfg. Co.
Webb Kammerer, Midvale Mining & Mfg. Co.
J. W. Kelin, Federated Metals Div., A. S. & R. Co.

Visitation and Transportation
Chairman: M. A. Bell, M. A. Bell Co.

O. J. Belzer, Banner Iron Works
G. D. Cobaugh, Harbison-Walker Refractories Co.
C. A. Fitz-Gerald, Sloss-Sheffield Steel & Iron Co.
T. C. Hamlin, U. S. Radiator Corp., Edwardsville, Ill.
C. E. Rothweiler, Hickman, Williams & Co.
Chester Walcher, American Steel Foundries, Granite City, Ill.
W. Carter Bliss, Scullin Steel Co.

Program

Chairman: R. A. Jacobsen, Caron-

Schedule of Sessions

Thursday, October 5

Registration, Jefferson Hotel.
Plant Visitation.
Evening—Smoker.

Friday, October 6

Morning—General Session—*Design as Related to Casting Problems*.
Chairman, L. N. Shannon, Vice President and Works Manager, Stockham Pipe Fittings Co., Birmingham.
Speakers: Steel Castings—A. H. Moorehead, Locomotive Finished Materials Co., Atchison, Kansas.
Gray Iron—E. B. Carpenter, American Car & Foundry Co., St. Louis.

Noon—Luncheon.

Address of Welcome: L. E. Everett, Chapter Chairman and Foundry Superintendent, Key Co., St. Louis.

delet Foundry Co., St. Louis
L. K. Bartholic, St. Louis Steel Casting Co.
E. A. Goerger, City Pattern & Model Works
G. W. Haley, Century Foundry Co.
C. H. Morken, Carondelet Foundry Co.
F. B. Riggan, Key Co.
M. E. Stewart, Green Foundry Co.
J. D. Walsh, Scullin Steel Co.
C. R. Culling, Carondelet Foundry Co.
L. C. Farquhar, American Steel Foundries, Granite City, Ill.

Entertainment

Chairman: L. J. Filstead, John C. Kupferle Foundry Co.
F. T. O'Hare, Central Brass & Aluminum Foundry Co.
Harold Wiese, Midvale Mining & Mfg. Co.
W. A. Zeis, Midwest Foundry Supply Co.
L. E. Everett, Key Co., East St. Louis, Ill.
G. W. Mitsch, American Car & Foundry Co.

Address: T. Dysart, President, St. Louis Chamber of Commerce.

Afternoon—

1:30-3:00—*Sand Control Session*.
Chairman: T. C. Hamlin, U. S. Radiator Co., Edwardsville, Ill.
Speakers: H. W. Dietert, Harry W. Dietert Co., Detroit.
N. J. Dunbeck, Eastern Clay Products Co., Eifort, Ohio.
3:15-5:00—*Steel Casting—Gating and Feeding*.
Chairman: H. M. Rishel, American Steel Foundries, Granite City, Ill.
Speaker: A. Johnson, Oklahoma Casting Co., Tulsa, Okla.
3:15-5:00—*Gray Iron—Gating and Raising*.
Chairman: C. B. Shanley, Semi-Steel Casting Co., St. Louis.
Speaker: O. J. Belzer, Banner Iron Works, St. Louis.



W. Carter Bliss
Vice Chairman



L. J. Desparois
Conference Committee
Chairman



J. W. Kelin
Secretary-Treasurer

ST. LOUIS CHAPTER OFFICERS

AMERICAN FOUNDRYMAN

7:00—Conference Dinner.
Chairman: L. E. Everett, Chapter Chairman.
Address: Karl Landgrebe, Tennessee Coal Iron & Railroad Co., Birmingham, Ala.

Saturday, October 7

Morning—

9:00-12:00—Round Table Discussions.

Chairman: Carl Morken, Carondelet Foundry Co., St. Louis.
Subject: "Melting Practice." Discussion Leader: G. P. Phillips, International Harvester Co., Chicago.
Subject: "Core Making." Discussion Leader: L. P. Robinson, Werner G. Smith Co., Cleveland, Ohio.

Session B—Steel.

Chairman: F. X. Hahn, Scullin Steel Co., St. Louis.

Subject: "Application of Internal and External Chills." Discussion Leader: W. F. McKee, Key Co., East St. Louis, Ill.
Subject: "Core and Mold Washes." Discussion Leader: P. J. Dapkus, Decatur Milling Co., Decatur, Ill.

Session C—Non-Ferrous.

Chairman: F. O'Hare, Central Brass & Aluminum Co., St. Louis.

Subject: "Defects in Non-Ferrous Castings." Discussion Leader: Arthur Fritschle, Federated Metals Div., A. S. & R. Co., St. Louis.

10:00—Special Student Session (Simultaneous with Round Table Discussions).

Chairman: C. Y. Clayton, Missouri School of Mines and Metallurgy, St. Louis.

Speaker: C. R. Culling, Carondelet Foundry Co., St. Louis.

L. F. Lottier, Peoples Gas Light and Coke Co.
W. C. Packard, National Engineering Co.
H. W. Johnson, Northwestern Foundry Co.

The program schedule provides for three meetings for each of the four branches of the industry, namely, steel, malleable, gray iron and non-ferrous, two general interest evening sessions and on the last day, Saturday, the 11th, a session for students. The casting sessions will be held during the mornings and afternoons of November 9 and 10, with the conference dinner the evening of the 10th.

Not on the schedule but of interest to many attending will be a major Big Ten Conference football game at Dysche Stadium, Evanston, between two of the leading contenders for the Big Ten championship, Northwestern and Purdue. Those wishing to attend this game with the Conference group are requested to order their tickets (\$2.85 plus 10 cents for mailing and registering) through A. W. Gregg, Whiting Corp., Harvey, Ill.

Chicago Chapter Plans for Large Attendance at Fall Regional Conference

THE Second Fall Regional Conference of the Chicago Chapter has been set definitely for November 9, 10 and 11 at the Museum of Science and Industry in Jackson Park, Chicago. As previously announced the Conference will be the occasion for the formal opening of the Foundry Exhibit at the Museum. This foundry exhibit which will be a complete working display and the many other exhibits of the Museum will offer much of interest as will the many conference sessions for the discussion of foundry practice which are being planned by the committee as attraction for a probable attendance of 1,000 foundrymen of the district.

The conference committee under the chairmanship of L. H. Rudesill, Griffin Wheel Co., with B. L. Simpson, National Engineering Company, as secretary, has already held several meetings to plan details of the program. Serving with Messrs. Rudesill and Simpson are the following:

- A. W. Gregg, Whiting Corporation.
- B. J. Aamodt, National Malleable & Steel Casting Co.
- H. A. Forsberg, Continental Roll & Steel Foundry Co.
- H. E. Orr, Burnside Steel Foundry Co.
- L. C. Fopeano, and A. Carlton, Museum of Science and Industry.

L. F. Hartwig, Chicago Malleable Casting Co.
Geo. B. Stantial, Illinois Malleable Iron Co.
W. Romanoff and C. O. Thieme, H. Kramer & Co.
J. D. Burlie, Western Electric Co.

Foundryman Wins Mackinac Race Classic

THE front cover this month pictures the racing sloop "Gloriant" which on July 21 finished first to win the Mackinac Cup for the best time in the universal division of the 1939 Classic 331-mile race from Chicago to Mackinac Island. This race is recognized as the greatest fresh water classic in the world. The announcement of the results of this race is of particular interest to foundrymen, for the owner-skipper of the "Gloriant," Anthony Herrmann, is connected with the Belle City Malleable Iron Co. and the Racine Steel Castings Co., Racine, Wis., having for several years been chief melter and now as foundry foreman of The Belle City Malleable Iron Co. Sailing with Mr. Herrmann as one of a crew of six was Ed Wheeler, assistant metallurgist, Belle City Malleable Iron Co. The corrected time of the

"Gloriant" in this race was 75 hours, 44 minutes and 15 seconds, some four minutes ahead of its closest competitor out of a field of 45 entries. The "Gloriant" is a 50 ft. Q Class sloop.



Tony Herrmann (left) and Ed Wheeler (right) showing pleasure at winning the Mackinac Classic. Photo taken in the foundry of the Belle City Malleable Iron Co., where both are employed.



(Left to right—standing) Geo. Fuller, Federal Foundry Supply Co.; Oscar Bringhurst, Semet-Solvay Co.; I. F. Cheney, Griffin Wheel Co.; H. M. Rich, Hickman, Williams & Co.; Harry Deutsch, Aluminum Co. of America and Chapter Secretary; H. J. Jameson, Detroit Testing Laboratories; (seated) W. B. Crawford and R. B. Crawford, Atlas Foundry Co., and J. Smith, Vickers, Inc.

Quad City Chapter Plans Special Meeting for October

WHILE the regular fall and winter program of the Quad City Chapter begins September 18 with an evening meeting at the Blackhawk Hotel, Davenport, Iowa, an October 20 meeting is being arranged as a special one-day affair of meetings and plant visitations. Arrangements are being made to provide inspection trips to the Farmall plant of the International Harvester Company, the Spreader Works and Harvester Works of the John Deere Company and the Rock Island Arsenal.

This affair, which takes the place of the two-day conference

held the past two years at the University of Iowa, will be sponsored by the same organizations, namely the Quad City Chapter, Northern Illinois-Southern Wisconsin Chapter, Northern Iowa Foundrymen's Association and the University of Iowa.

The schedule for the day follows:

October 20, Friday
8 A.M.—Registration, LeClaire Hotel, Moline.
8 to 12—Plant Visitations.
12:30 P.M.—Luncheon, LeClaire Hotel.
Afternoon—Plant Visitations.
Golf, Short Hills Country Club.
6:30 P.M.—Dinner.
Technical Session.

Wisconsin Has Record Outing

THE annual summer outing and golf party of the Wisconsin Chapter was held at the Blue Mound Country Club, July 21. This club, near Milwaukee, provided an ideal place for the outing, and a record attendance of considerably over 400 proved the popularity of this affair.

The attendance was made up largely of executives, not only from the foundry industry, but also from the iron and steel industry of the Milwaukee area.

Dignity was added to the occasion by the presence of the Governor of Wisconsin, the Honorable Julius P. Heil, and, as

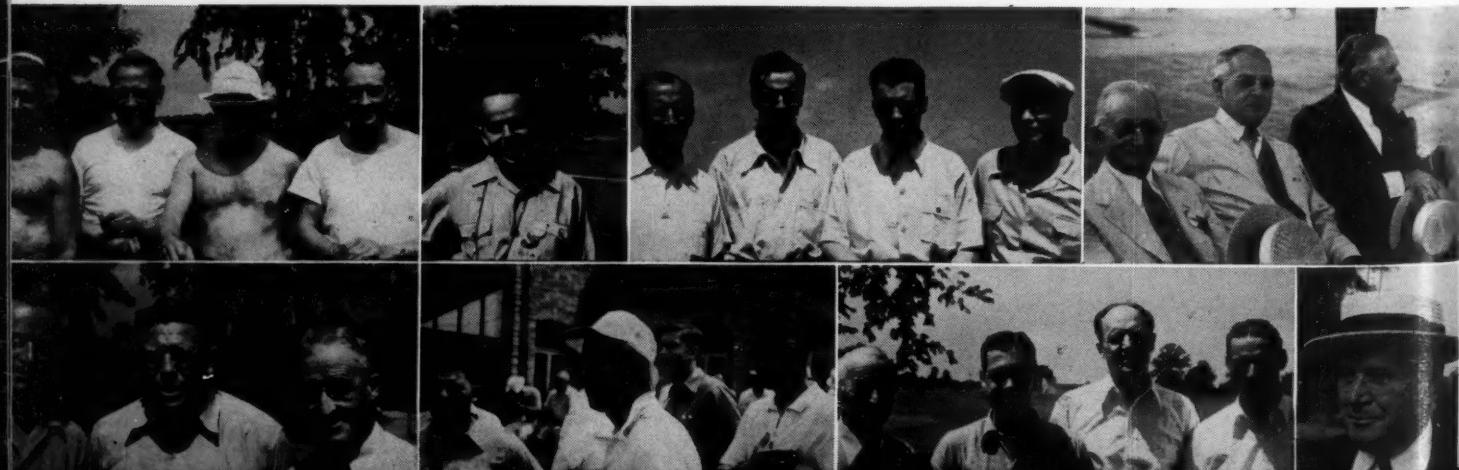
Some of the several hundred golfers and non-golfers at the Wisconsin Chapter Outing, July 21.
(Photos, Courtesy John Bling, A. P. Green Firebrick Co.)

he remarked, it was proper that he be there for the reason that he has been identified with the foundry industry either directly or indirectly for fifty years.

Some 390 members and guests sat down to the dinner, which climaxed a most enjoyable affair. The Chapter outing committee was under the chairmanship of T. E. Ward, Badger Malleable & Mfg. Co. Mr. Ward and some of the others at the outing are shown in the accompanying pictures.

Detroit Chapter Bids Farewell to Cheney

MEMBERS of the Detroit Chapter recently sponsored a golf outing as a farewell party for Ira F. (Bud) Cheney, immediate past chairman of the Chapter, who has been given charge of the St. Paul, Minn., plant of the Griffin Wheel Co. The accompanying picture shows a few of the chapter members and officers who took part in the outing. Mr. Cheney, who for years had been very active in the Detroit Chapter activities and its predecessor, the Detroit Foundrymen's Association has been connected with the Griffin Wheel Co. plant in Detroit since 1919 when he was made an inspector. He later rose through the ranks as foundry foreman, cupola foreman, until he was made superintendent of the plant in 1929. Because of his abilities, he was chosen to head up the St. Paul plant, one of the largest of this nation-wide organization.



Chapter Chairmen and Vice Chairmen



W. O. McMahon
Vice Chairman
Birmingham



D. M. Storie
Vice Chairman
Ontario



J. E. Eppley
Vice Chairman
Southern California



R. J. Allen
Vice Chairman
Metropolitan N.Y.-N.J.



F. C. Wheeler
Vice Chairman
Central New York



B. D. Claffey
Vice Chairman
Wisconsin



F. Ray Fleig
Vice Chairman
Northeastern Ohio



H. F. McFarlin
Vice Chairman
Cincinnati

September and October Chapter Meetings

Chapter	Date	Place	Speaker	Subject
Chicago	Sept. 23 Oct. 9	Lincolnshire Country Club Medinah Club	Dr. Phillip Fox, Rosenwald Museum of Science and Industry	Outing
Northeastern Ohio	Sept. 14	Cleveland Club	Technicolor Film—"Steel—Man's Servant"	
Birmingham	Oct. 9	Hotel Hollenden	A.F.A. Machine Tool Congress Session	
Southern California	Sept. 16	Pineview Beach	Annual Barbecue and Picnic	
Northern California	Sept. 21		H. W. Dietert	"Sand Control"
Quad City	Sept. 8	Lake Merrit Hotel, Oakland	H. W. Dietert	"Sand Control"
	Sept. 9	A.F.A. Day, San Francisco Fair—Registration, Mine & Metals Bldg.		
	Sept. 18	Blackhawk Hotel, Davenport		
	Oct. 20	Plant visitation and joint meeting with Northern Illinois-Southern Wisconsin Chapter, University of Iowa, Northern Iowa Foundrymen's Association		
Wisconsin	Sept. 15	Hotel Schroeder, Milwaukee	D. M. Johnson	"Machine Shop Control of Inspection of Castings"
Central New York	Oct. 8	Onondago Hotel, Syracuse	E. O. Jones	"Safety and Hygiene in the Foundry"
St. Louis	Sept. 14	York Hotel		Outing
Michigan	Sept. 15	Christiana Country Club, Elkhart		



H. E. Alex
Chairman
Quad City

A Safety and Hygiene Program in a Small Foundry-I

By Peter E. Rentschler,* Hamilton, Ohio



This paper was presented before the Safety and Hygiene Session of the 43rd Annual Convention, Cincinnati, O., May 15-18. The author, P. E. Rentschler, is President, Hamilton Foundry and Machine Co., Hamilton, O. This is the first of a three section paper relating to the development of safety and hygiene in a small foundry. Hygiene is the first principle discussed. The author explains how the above organization planned lectures and showed movies, giving health hints first to the employees and later, at the employees' request, to their families. The company next gave all employees, laborers, office workers and executives physical examinations, including x-rays and blood tests, seeking those who might have tuberculosis, silicosis or some venereal disease. The results obtained are interesting and valuable.

ALTHOUGH the title of this paper implies a safety and hygiene program for a small foundry in a general way, the writer's experience has been limited to the two plants in which he is interested, namely, The Decatur Casting Co., Decatur, Ind., and The Hamilton Foundry & Machine Co., Hamilton, Ohio.

It might be well to relate the experience at the Decatur plant that led to renewed and, the writer feels, permanent activity in the Hamilton plant. The Indiana Occupational Disease Act went into effect on August 7, 1937. Prior to the effective date of this act, we sought occupational disease coverage on our employees from the private insurance carrier handling our workmen's compensation insurance, but it refused the risk. The manual rate set by the Rating Bureau of the Industrial Board of Indiana was \$2.86 per \$100.00 of payroll for the O.D.** alone, which, added to our workmen's compensation rate of \$1.389, brought the total to \$4.25 per \$100.00 of payroll for workmen's compensation and O.D. coverage.

Investigates O.D. Coverage

In our investigation of occupational disease coverage, we consulted foundries in various districts and found the O.D. rate was higher in many states than that set in Indiana. In Ohio, silicosis was covered by an amendment under the Workmen's Compensation Act, July 31, 1937, and the additional cost of the coverage for the first year was only one cent per \$100.00 of payroll. This one cent was in addition to the previous one cent that had covered the previously listed compensable occupational diseases. Silicosis was the twenty-second disease listed under the act. No one in Ohio seemed worried about the new O.D. coverage or the probable future cost, but we could not help but think of our Indiana experience and of the experience of foundrymen in other states. The writer talked informally with most of the foundrymen in the

Hamilton, Ohio, district, but could find no one who was particularly interested in what the rate might be some time in the future.

As the writer checked further with foundrymen in different parts of the country as to their experience, he began to investigate the examination programs that were followed. He found that in some localities, clinics had been organized to reduce examination cost. The writer felt that if he could interest local foundrymen with his own company in Hamilton, the company could arrange for examinations on a wholesale basis and reduce the cost for these examinations. To further interest in such a program, the writer invited all foundrymen in the Miami Valley (Cincinnati, Dayton, Middletown and Hamilton) and Southern Indiana and Northern Kentucky to a dinner meeting in Hamilton on March 11, 1938. About 50 attended. Thomas M. Gregory, then Chairman of the Ohio Industrial Commission, and Dr. W. E. Obetz, the Commission's medical investigator, came from Columbus, Ohio, and attempted to impress those present with the uncertainty of the risk assumed in the new O.D. coverage of silicosis. Still no one became sufficiently interested to cooperate in an examination program.

We rather hesitated. But finally in June, 1938, we decided to proceed with re-examination of all employees, including in each employee's examination a Wasserman blood test and a chest x-ray. All this was done at the company's expense. All employees means the entire organization—workers, clerical help, supervisors and executives.

Physical Examination Policy

We had been physically-examining new employees since 1927 and old employees at intervals, but without blood test or chest x-rays. However, there was no regularity about re-examinations. Our last previous general examination of all men at work had been in December, 1936. Since the start of physical examinations in 1927, our policy has been to examine employees at the company's expense as

*President, The Hamilton Foundry & Machine Co.

**The letters O.D. are the abbreviation of the words "occupational disease."

often and whenever the company sees fit. Applicants are examined at the company's expense.

Shop Reactions

We wondered what the shop reaction would be to the addition of the blood test and chest x-ray to the regular physical examination (Form R61B), but we felt that we would have no difficulty in view of the previous results of our routine physical examinations. We always have felt that the men were grateful to have the check-ups, as we treated each case as an individual problem. Each man was talked to by the examining physician and recommendations made concerning any physical defect that should be discussed with his family physician. However, in anticipation of the blood test, we thought it would be well to have some outsider give our men information. We contacted our local city health commissioner, Dr. C. J. Baldridge, who suggested that the Ohio State Department of Health would be glad to assist us. There was some delay in making arrangements with Dr. P. L. Harris, assistant chief, Bureau of Venereal Diseases, Ohio State Department of Health, to lecture before our men, and, in view of our vacation period scheduled from July 1st to July 10th inclusive, we decided to proceed with the examinations to complete them before the vacation period, thus having that time to study the findings.

It so happened that Dr. Harris came on June 24 to schedule his meeting when we were right in the midst of our examinations. However, we were having blood tests made without any refusals by the men, so we decided to postpone Dr. Harris' lecture and movies until July 13, immediately after the return to work following our vacation period. The physical examinations were made at our plant first aid room, while the blood tests and x-rays were made on order at Mercy Hospital, Hamilton, Ohio. The men were taken to the hospital in groups during working hours on company time on a pre-arranged schedule so as to eliminate waste time.

Arrangement for Blood and X-Ray Tests

We had arranged with the hospital to have the internes explain the blood test to each man. If he was hesitant or refused to take the test, it was to be all right. There was to be no compulsion. To our surprise, only one out of 197 men refused the Wasserman test, and that individual already was undergoing treatment at Mercy Hospital Free Venereal Clinic.

Interpretation of X-Ray Plates

In every instance, flat plates first were used for chest x-rays. If the reading indicated any chest condition, the man was sent back for stereoplates. In addition to the x-ray reading made by the roentgenologist, Dr. Harry Lowell of Mercy Hospital in conjunction with the physical examination findings and blood test reports, independent interpretation was made by a Chicago roentgenologist specializing in industrial work. Dr. H. E. Davis.

Findings

In our x-rays, we found three active cases of infectious tuberculosis and further tests of sputum, etc., were made on those individuals. Of the blood tests, 8 out of 197 were positive, but none in the infectious state. These men were told of their condition and permitted to continue at work with the stipulation that they must undergo treatments and bring a certificate from the doctor following each treatment.

In view of the tuberculosis findings and the silicosis coverage under the law, the writer felt it would be well to clarify, as much as possible, these two conditions, tuberculosis and silicosis, in the minds of the men. Remembering the excellent discourse that Dr. W. E. Obetz had given to the foundry executives in March, the writer asked the Ohio Industrial Commission to have him talk on July 13 at the same meeting with Dr. Harris.

As our examination program went on for several weeks, everyone seemed to become nervous, and we were glad that we had arranged the shop meeting for July 13, 1938. Immediately after the vacation period on July 11, 1938, we posted a "Notice to All Employees" explaining the meeting scheduled for July 13 and, among other things, stated therein:

"You are expected to be on hand at the start of the meeting—when the whistle blows—at 8 o'clock, or your day's pay will not start until you are at work after the meeting. Shop operations will be approximately seven* hours for the day."

Shop Meeting Program

The meeting opened promptly at 8:00 a.m., our regular shop starting time. Every shop employee was on hand on time. The meeting overran the one hour anticipated in the schedule by 15 minutes, but we felt that it was a most successful meeting, even though the pay allowances were \$155.42. The meeting was attended only by shop employees with no supervisors or office personnel present, as the writer wanted to keep the meeting as informal as possible and let the men feel free to ask questions.

The writer addressed the meeting and explained that the two talks to follow were educational and

*Note: The regular work day is 8 hours.

Fig. 1—Reminders of safety and hygiene in the Hamilton Foundry and Machine Co.



should allay any of the fears that the men might have, as evidenced by conversations with some of them. He told them that they were not worried so much about the results of the examination in themselves as they were about the possibility of loss of their jobs as a result of the findings. The writer told them that no one at work needed to fear loss of time as a result of the examination unless his condition was harmful to others. Then if he took proper care of himself and was all right again, he could resume work. To do all this, the company needed the full cooperation of every individual employee.

The writer explained that the company had not suddenly gone philanthropic, big hearted or paternalistic, but that this entire program was an economic measure. Present business did not justify the expenditure, but, over a period of years, the company expected to make money by these examinations and tests. It did not expect the expenditure to pay dividends this week or this month but, over a period of four or five years, the program would have to pay dividends or the company could not afford to continue the program. The company felt that the better health of its employees would result in better attendance with less interference to production by absentees and that better production would mean more earnings for the men so that they would have more money for their families to spend. If these things happened, there should be profit for the company.

Dr. Obetz, Ohio, gave an excellent and practical talk; a very non-technical explanation of silicosis and tuberculosis, simple enough for any layman to understand. An open forum was held and some questions were asked which Dr. Obetz answered. Dr. P. L. Harris, assistant chief, Bureau of Venereal Diseases, State Department of Health, showed two films, "For All Our Sakes" and "Society on Trial," and gave an informative talk on venereal diseases, stressing syphilis in particular, so as to explain the Wasserman blood test. He told of the Ohio program for the control of syphilis in industry that was being carried on in cooperation with the U. S. Public Health Service.

Dr. C. J. Baldridge, city and county health commissioner, gave a short outline of the social disease program being carried on in the city and explained the free venereal disease clinic at Mercy Hospital. He also told of the tuberculosis programs, the Free Tuberculosis Clinic at Mercy Hospital, and stressed the need for the proposed tuberculosis hospital, the bonds for which were to be voted on in the August election. (Defeated). It was through the cooperation of the local health commissioner that the State of Ohio Department of Health Laboratory made the blood analyses at no cost to us. Informative literature was distributed to each man as he left the meeting. Such literature consisted of:

The Metropolitan Life Insurance Co. pamphlet "The Great Imitator" and the Ohio Department of Health Educational Circulars, issued in cooperation with the U. S. Public Health Service: No. 114 "A Few Facts About

Gonorrhea," No. 115 "A Few Facts About Syphilis," and No. 130 "Some Facts About Venereal Diseases."

Follow-up of Examination

After this shop meeting, we had our examining physician and personnel director interview each employee and give each man individually the findings of his case. We were anxious to keep the individual results confidential and, therefore, called each man into the first aid room for an individual interview. If he was in good physical condition, we felt that this would be the best way to let him know that he was in good shape, and at the same time he might feel free to ask the doctor a question or two. If some physical attention was needed, the doctor advised him of this and suggested that he consult his own physician. If a man was defective physically, the doctor laid the facts of his case before him and tried to help him determine what was best to do. In each case, the individual was told that if he wanted to consult with the writer, he could, and several took advantage of this offer. The writer feels that we had an excellent reaction in the shop, as the men all seemed grateful and appreciative of this health check-up. Those that were physically fit were happy and grateful, and the remainder were most cooperative in seeking to correct their physical defects.

Community Comments

The community complimented us on our program as it learned of it through the various agencies that had assisted us, that is, the local public health commissioner, the State Department of Health, the Ohio Industrial Commission, the Hamilton Industrial Safety Council and the Hamilton Syphilis Commission.

Supervisors' Meeting

We duplicated the shop session program the same evening at a meeting for our supervisors, office personnel and invited guests. These guests were personnel and safety directors and executives of local industries; the regional safety engineer, Division of Safety and Hygiene, and the branch office deputy, Ohio Industrial Commission; local plant physicians; members of the Hamilton Syphilis Commission and others. An added speaker at the evening program was one of the guests, Dr. Louis Frechtling, personnel director and company physician, The Champion Paper & Fibre Company, and president, Hamilton Industrial Safety Council, who spoke on "Education in Health." Lunch was served after the program.

Charges for Medical Attention

We ran into some difficulty at first with individuals who had positive Wasserman tests, in that they had experiences with unreasonable charges for treatments by various doctors. It seems that the prevailing practice of some of the physicians that the men consulted was to charge \$5.00 per treatment. When the men came back and reported this to us, we knew they could not undergo treat-

ment at this rate, so we then advised them to go to the Free Venereal Disease Clinic at Mercy Hospital, where they would be treated at no charge. However, we told them we felt they should make some contribution to the clinic for the treatment.

The writer reported our experience to the Hamilton Syphilis Commission and was asked if he would appear as an industrial layman before the Butler County Medical Association to see what could be done to secure more reasonable rates. The writer did this, but the response was, to his way of thinking, none too cooperative. He explained the efforts the Federal Government was making, the State Government, the Municipal Government, and individuals were putting forth to eradicate venereal diseases, and syphilis in particular, and unless the doctors would agree to handle such cases at a nominal charge, the problem would be made more difficult, and there would be a tendency for further socialization of medicine by making it necessary for the men to go to public clinics.

Meeting on Tuberculosis

The shop men had been so interested in this first morning meeting that we decided to schedule a meeting August 25, 1938, with Dr. W. J. Smith, chief, Bureau of Tuberculosis, State Department of Health, Columbus, Ohio, to talk on "Tuberculosis" but advised the men that this meeting would have to be voluntarily attended by them with no pay. Every single employee came, 100 per cent being on hand when the meeting opened at 8 o'clock, the regular starting time for the plant. We scheduled our operations this day so that actual operations would not start until 9 o'clock. Dr. Smith talked and showed his movies "Contacts and How They Are Made" and "Live and Let Live." Our local health commissioner again cooperated by not only his attendance but also with a talk on the tuberculosis program in the community and the Free Tuberculosis Clinic at Mercy Hospital. Dr. Smith distributed the Ohio Department of Health booklet, "Tuberculosis—What You Should Know About It—Its Discovery, Prevention and Cure."

An evening program, repeating the morning program, was held for supervisors, office personnel and invited guests. Charles G. Barth, safety engineer, Division of Safety and Hygiene, and Stanley Ogg, branch office deputy, Ohio Industrial Commission, both spoke briefly.

Employees Family Health Meeting

Dr. Smith was very well received and before long we had expressions from some of the men that his would be an excellent program for their families to see and hear. We gave this consideration and thought somewhat of holding a program in a public assembly hall where we could get all of our employees with their families together in one group. On the other hand, we felt it would be better to hold the meeting at the plant to more properly identify the program as part of our health educational work. Our plant assembly room, which also serves as a lunch room, will hold 180 persons com-

fortably. We wondered whether we would have enough interest among our employees to fill this room, even if the program were held on Saturday so that children might attend. The writer was most skeptical of the attendance possibility but decided to investigate.

Although Dr. Smith ordinarily is not available on Saturday, he volunteered to come any Saturday at any time we wanted him, and as long as individuals would be on hand to listen to his program. We canvassed the plant to see what response we might have. To the writer's surprise, 128 employees signified they would bring 541 members of their families. We decided to schedule four "Dr. Smith" programs for Saturday, October 8, 1938; the first at 9:00 a.m., the second at 10:30 a.m., the third at 1:00 p.m., and the fourth at 2:30 p.m. and then recanvassed the shop with the request that the men make reservations for a specific performance.

Lo and behold! We had reservations for 560 persons and finally when the day came, we had 711 in attendance.

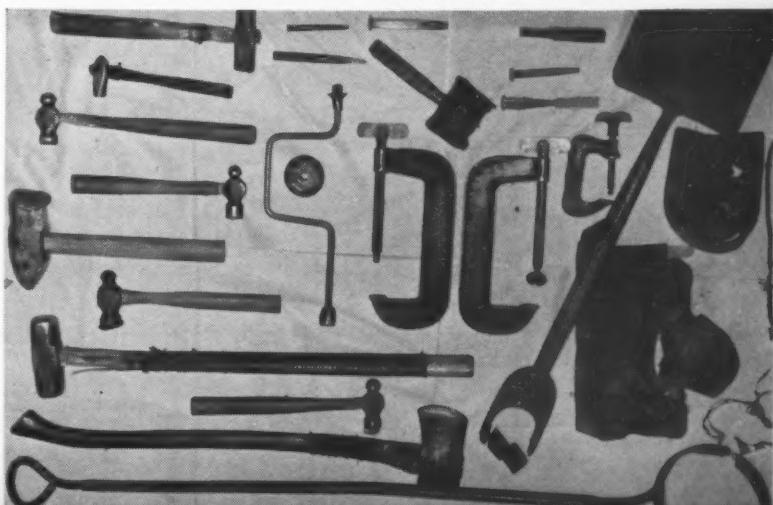
The Open House Develops

While we were planning this meeting series, we thought that it might be well to do something that also would be of interest to the families—women and children who might come—as an added inducement for them to come. We thought that an opportunity to go through the foundry to see where husband, dad, brother or sweetheart worked, would be interesting. Then the thought occurred that we also might show a few finished products in which our castings are used. Before we knew it, we had plans for an "Open House" for employees, their families and their friends. However, before getting too deeply into the "Open House," the writer wishes to bring you up to date on our safety work. Thus far, he has been discussing only the health work.

Safety Work

We have always done safety work, but never had a specific, well organized plan. The Hamilton Chamber of Commerce, with the Division of Safety and Hygiene, Ohio Industrial Commission, organized the Hamilton Industrial Safety Council the latter part of 1936. We, along with

Fig. 2—Unsafe tools and equipment collected at the Hamilton Foundry and Machine Co.



72 other Hamilton companies, joined as a matter of routine, hoping some good would result. Perhaps we might win a certificate of merit award. We posted notices, announced the campaign and appealed to our employees by bulletin board notices to cooperate with us. In the Foundry and Foundry Products group of 5, we stood

- 4th for first 6 months of 1937.
- 5th for second 6 months of 1937.
- 5th or last for the year 1937.

Prior Interest

Toward the end of 1937, W. W. Rose, executive vice president, Gray Iron Founders' Society, Cleveland, personally sponsored a safety drive for specified foundry employees for the period of January 1, 1938, to March 31, 1938. Mr. Rose contributed the cash prizes out of his own pocket. The writer was president of the society at that time, but he did not feel that much could be accomplished by Mr. Rose's project. However, he felt obligated to make the usual fan-fare of an additional safety contest, but different because of cash money for prizes. There was some publicity in the local newspaper as well as in the three Cincinnati papers as to the foundries in the Cincinnati district that were participating in the contest. There were 6193 foundry employees, including foremen, but excluding clerical help, eligible at the drawing, of whom 180 were from our Hamilton plant and 70 from our Decatur plant. Ed Rich, of our Decatur plant, received fifth prize, whereas Albert Frazee, of our Hamilton plant, drew the eleventh prize. The drawing was conducted by Judge Lee E. Skeel, Court of Common Pleas, and president, National Safety Council. These prizes of \$1.00 in each plant stirred up some additional interest in safety, not only in the shop, but also in the writer. He realized again that we were following no particular systematic program, but were going along in a disorganized way.

Interest Stirred

The writer does not want to convey the impression that we had never previously done anything in the way of safety and hygiene. Perhaps we even had been rather progressive in trying to keep our conditions better than those of the average foundry, always considering the State of Ohio requirements and the best interests of our employees. For years we have done first aid work and gradually built up a small well stocked and well kept first aid room. However, the room was attended only by certain of our office employees who were able to administer minor first aid treatment. If an injury might be serious, the individual was sent to a doctor immediately. Each individual that came to the first aid room was required to sign a form, First Aid Report, indicating that he had been treated and outlining briefly the reason for the injury. We tried to impress upon our employees the necessity for having minor injuries treated immediately, and a leaflet of information for employees issued in April, 1929, under Paragraph 8,

"Safety First," subparagraph, "Cooperate with the First Aid Department," stated, "You must call at the first aid room for the care of all injuries no matter how slight. Failure to call for first aid after an injury will make you subject to discharge."

We had certain inspection forms that were used in accordance with the requirements of the Ohio Foundry Code.* We had in addition an inspection form covering sandblasters' masks and sand blast mill and grinding room equipment, and one covering fire equipment.

We had a safety appliance receipt, Form R-83, which each man was required to sign upon receiving a designated item of such equipment. We had rigid requirements as to the use of goggles by grinders, chippers and welders, and the use of helmets by sandblasters, and the leaflet of information for employees of April, 1929, stated: "Grinders, Chippers and Welders must wear goggles. Sandblasters must wear helmets." We had rigid requirements as to the use of goggles and leggings when handling molten iron as referred to in the 1929 leaflet for employees, and had posted special porcelain enameled metal signs throughout the shop to this effect as far back as January, 1932. These signs were made to our order reading: "State Law—All Handlers of Molten Metal Must Wear Goggles and Leggings." Other metal safety and accident prevention signs also had been posted around the shop.

Non-silica parting was used in the foundry as soon as we learned of its manufacture. We cleaned the ceilings, walls and beams at varying intervals. We used a heavy duty portable vacuum cleaner, purchased after the 1936 A.F.A. Detroit Show, and an oil dust layer purchased after the A.F.A. Milwaukee Show in 1937. Steel grit was used in the blasting booths and rotary blast mill, and the blasters wore healthguard masks with outside protective hoods.

We had a few ladders that were equipped with safety shoes, and a number of ladders which we later found were quite unsafe.

All of our supervisors and some key men were on the mailing list to receive regularly the Monthly Bulletin of the Ohio Industrial Commission, "O.I.C. Monitor," which covers activities in Ohio.

Use of Safety Shoes

In November, 1937, we invited a representative of a Safety Toe Shoe Company to come in and talk to our foremen at a social meeting one evening and had him display the various types of safety shoes that he had available. We had him take orders from such of the foremen as would purchase shoes, to try them out and started a campaign for safety toe shoes throughout the plant in November, 1937. Up to the time of our inaugural safety meeting on September 13, 1938, we had sold 23 pairs of safety

*Bulletin 205, *Specific Safety Requirements Covering Operations of and Conditions in Foundries*, adopted April, 1931, by the Ohio Industrial Commission.

(Continued on Page 15)

New Members



Company Members

Hull Iron & Steel Foundries, Ltd., Hull, Quebec, Canada (Harold P. Coplan, President).
Nathan Manufacturing Company, New York, N. Y. (Wm. Haas, Foundry Supt.)
Proof Machine & Brass Foundry Co., Cleveland, Ohio (James Plachy, President).

Personal Members

D. E. Ackerman, Asst. Metallurgist, American Brake Shoe & Foundry Co., Mahwah, N. J.
J. R. Adams, Fdry. Supt., Crucible Steel Casting Co., Lansdowne, Pa.
Omer L. Allen, Pontiac Motor Co., Pontiac, Mich.
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W. Howard Clark, Sales, Link-Belt Company, Philadelphia, Pa.
Robert E. Coy, Pattern Foreman, Pontiac Motor Co., Detroit, Mich.
Charles M. Diel, Foundry Engineer, Sorbo-Mat Process Engineers, Huntington Park, Calif.
E. N. Downing, Engineer, Thomson Lab., General Electric Co., West Lynn, Mass.
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J. A. Griffin, Foreman, Pontiac Motor Co., Garden City, Mich.
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Paul Wm. Hurm, Gen'l Mgr., The Buckeye Mfg. & Foundry Co., Overpeck, Ohio.
J. W. Jessiman, Gen'l Mgr., Industrial Mineral Products, Inc., South San Francisco, Calif.

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Theodore Linskens, Core Room Foreman, Kinney Iron Works, Huntington Park, Calif.

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George A. Pope, Asst. Advertising Mgr., The Foundry, Cleveland, Ohio.

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C. H. Welch, Supt., The Alloy Cast Steel Co., Marion, Ohio.

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Foreign Members

Ernest A. Carlisle, Repr., Wm. Cummings & Co. Ltd., London, England.

Ronald Alfred Cheers, Manager, A. C. Cheers, Coburg, Victoria, Australia.

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R. V. Welch, Metallurgist, Tropical Oil Co., El Centro, Colombia, South America.

Safety and Hygiene Program in a Small Foundry

(Continued from Page 14)

shoes, including the six foremen try-outs of November, 1937, as follows:

November, 1937, 6 pairs to foremen.
December, 1937, 3 pairs to workmen.
January, 1938, 2 pairs to workmen.
February, 1938, 0 pairs to workmen.
March, 1938, 1 pair to workman.
April, 1938, 1 pair to workman.
May, 1938, 1 pair to workman.

June, 1938, 0 pairs to workmen.

July, 1938, 2 pairs to workmen.

August, 1938, 7 pairs to workmen.

Total—23 pairs.

About this time we decided a subscription to "Safety Engineering" magazine might help stimulate some foreman interest if this monthly publication was passed around to them, so we subscribed starting December, 1937.

(To Be Continued in October American Foundryman)



Abstracts

Note: The following references to articles dealing with the many phases of the foundry industry, have been prepared by the staff of *American Foundryman*, from current technical and trade publications.

When copies of the complete articles are desired, photostat copies may be obtained from the Engineering Societies Library, 29 W. 39th Street, New York, N. Y.

Alloys

CAST. "Committee Report on Light Metals and Alloys, Cast and Wrought," A.S.T.M. Preprint 20, 1939, pp. 1-13. Revision of tentative standards on four metals have been recommended to bring the specifications in line with present commercial practice, they are: Aluminum-alloy (Duralumin) sheet and plate (B78-36T), Aluminum alloy (Duralumin) bars, rods and shapes (B89-36T), magnesium-base alloy ingot for remelting (B93-38T) and aluminum-magnesium-chromium alloy sheet and plate (B109-36T). Three new specifications, aluminum-base alloys in ingot form for die castings, aluminum alloy ingots for remelting (B24-39T) and aluminum for use in iron and steel manufacture (B37-39T) were submitted for publication. Withdrawal of two standard specifications are recommended since the standards are covered by new specifications now being proposed for publication as tentative. They are: Aluminum ingots for remelting (B24-29) and aluminum for use in the manufacture of iron and steel (B37-26). (Al.)

COPPER. "Cast Copper and Copper-Base Alloys," by Sam Tour, *Metal Industry (London)*, vol. 55, no. 3, July 21, 1939, pp. 51-55. Paper presented as an appendix to the report of Committee B-5 of the American Society for Testing Materials at their recent annual meeting. The author discusses the difficulties in the way of developing some standard classification for the non-ferrous alloys, and puts forward a tentative classification which is presented in the article in tabular form. (Al.)

HIGH CONDUCTIVITY. "Copper and Copper Alloy Castings," H. J. Miller, *The Metal Industry (London)*, vol. 54, Nos. 24, 25 and 26, June 16, June 23, June 30, 1939, pp. 642-646, 659-662 and 689-691. An International Foundry Congress paper presented to give the latest developments pertaining to the special high-conductivity and high-strength alloys which have become available in recent years. This paper is divided into five sections; the first dealing with tough pitch copper. Section one on oxygen and hydrogen explains the working of both gases on molten copper

—when oxygen was high hydrogen was low and when oxygen low the hydrogen was high—and how in each of the above cases hydrogen effected solidification. Section two on deoxidized copper discloses the various deoxidizers recommended and most commonly used; and then gives their effects on conductivity and properties. The third section summarizes the properties of general copper alloys which in the form of castings are used extensively for electrical purpose. Bronzes and brasses are discussed and the author points out numerous advantages and disadvantages of each metal for electrical use. Section four gives the alloys that have been developed in the past 20 years owing their development to the underlying principles of precipitation hardening; and the precipitation hardening process is then explained. Outstanding electrical properties of copper-chromium series are discussed and a equilibrium diagram is shown. Other precipitation hardening alloys are presented such as copper-nickel-silicon, copper-cobalt alloys and copper-beryllium alloys along with figures showing their qualities and compositions. Section five is limited to a consideration of the procedure suitable for deoxidized copper and copper containing chromium additions; and the melting procedure is told in detail giving particular attention to absorption of hydrogen and gas solubility. Some amount of success has been met by using fragile molds and cores in combating the weakness of copper at temperatures just below the freezing point. Shrinkage is due to the absence of solidification range and it was found necessary to provide finding heads and risers of generous size. A condensed discussion on the author's paper is also of great interest. (Al.)

LIGHT. "Properties of Light Alloys," by M. Hajek and J. Koritta, *Metal Industry (London)*, vol. 55, no. 3, July 21, 1939, pp. 63-65. Paper presented before International Foundry Congress and 36th Annual Conference of the Institute of British Foundrymen. The authors describe a study which they made of the influence of repeated melting on four aluminum casting alloys. The experimental work was done on four standard aluminum alloys, which were: Aluminum-copper, aluminum-copper-zinc, aluminum-silicon-copper and aluminum-silicon-magnesium. Three tables are shown in this article illustrating composition of alloys used for testing, tensile properties of repeatedly remelted alloys and compositional change after remelting. (Al.)

Cast Iron

HIGH DUTY. "High Duty Cast Irons," *Canadian Metals and Metallurgical Industries*, vol. 2, nos. 6 and 7, June and July, 1939, pp. 135-138, 142 and pp. 174-175. This paper has been abstracted from the "First Report of the Research Committee on High Duty Cast Irons for General Engineering Purposes," as presented

before British Institution of Mechanical Engineers. Due to its length the paper is divided into two sections. This article shows the development of high-duty cast irons and its development in relation to traditional materials. The use of refined pig iron and steel in charges is discussed along with the hot-mold iron process. Numerous alloy cast irons are listed giving information on how they may be used to their best advantage in making irons stronger, tougher and harder. Various types of furnaces are mentioned for cast iron melting practice. Inoculation is also brought out in this paper. Heat treatment, malleable cast iron and low-carbon alloy irons are a few more of the topics this article covers. Quite a few special irons are listed under three main headings: austenitic irons, martensitic irons and other special alloy cast irons. The article is concluded by giving the properties and wear resistance. Properties which were used in the article were: hardness and machinability, tensile strength, impact strength, fatigue strength and damping capacity. Wear resistance brought out by two elements corrosion and heat. A chart showing high-duty cast irons in general production and some industrial applications are included in the article. (C.I.)

THERMAL CONDUCTIVITY. "The Thermal Conductivity of High-Duty and Alloy Cast Irons," by J. W. Donaldson, *Foundry Trade Journal*, vol. 60, no. 1191, June 15, 1939, pp. 513-516. The thermal conductivity of gray cast iron is lowered by copper in a similar manner to which it is lowered by silicon and nickel. The influence of copper, however, is approximately half that of silicon. Molybdenum tends to raise the thermal conductivity of gray cast iron, although not so pronounced as in the cases of chromium and tungsten. Where nickel and chromium or nickel and manganese are alloyed together in cast iron, it was found that nickel lowered the thermal conductivity but the manganese and chromium counteracted it a slight degree. When a large portion of nickel is used it has a pronounced influence upon the thermal conductivity, but where copper partly replaced the nickel, the influence is not so noticeable. It was also found that aluminum, even in the presence of chromium, has a very pronounced influence on lowering the thermal conductivity of cast iron. Numerous graphs and tables are shown throughout the article for the readers interest. (C.I.)

Chill Cast Ingots

TESTING. "Inverse Segregation," Dr. Joseph Alexander Vero, *The Metal Industry (London)*, vol. 54, No. 24, June 16, 1939, pp. 639-642. Two particulars were taken into account in this article, (1) how the extent of inverse segregation changes with the program of solidification, in the solid part of the ingot; and (2) whether and how the average composition of the solid part and that of the liquid are changed during solidification. This ex-

periment was tried with an alloy composed of 95 per cent of commercial aluminum and 5 per cent "Banco" tin and prepared in a gas fired furnace. The alloy was poured in a mold; part of the alloy was allowed to solidify, the mold was tilted and residual liquid run into a cavity made in the sand. Two radical cuts were made through the shell and the remainder of the shells machined, layer by layer, to detect segregation. Residual from the cavity solidified and was sampled by taking two radical cuts reaching the center. Solidification was found to be slow till the half cross section of the ingot solidified and then it became more rapid, and segregation arises during solidification of the internal parts of the ingot and proving the theory that the segregation is a consequence of the migration of the residual liquid from the center towards the outside of the ingot at some stage prior to complete solidification. The author in closing his article throws new light on old theories. (S.)

Cupola

SMALL. "Information on a 20 Inch Cupola," *Canada's Foundry Journal*, vol. 12, No. 6, June, 1939, pp. 24-25. This article is the request of a foundryman for information on the construction of a 20-inch cupola and the resulting answer by the editor. (F.)

Gases

MELTING. "Gas Unsoundness in Metals," G. L. Bailey, *The Metal Industry (London)*, vol. 54, No. 25, June 23, 1939, pp. 667-671. Special reference to the influence of melting conditions on gas absorption is the main concern of this paper; and the presence of cavities due to contraction of metal during solidification, mechanical entrapping of extraneous gases and gases evolved on solidification are also stressed. Throughout the first part of the paper oxygen and hydrogen are the two gases discussed with their solubility in numerous metals. The author explains how castings are made unsound by the gas evolution that takes place during solidification. A chart showing solubility of hydrogen in nickel, iron, aluminum and copper are shown along with two tables giving effect and soundness of bubbling of nitrogen and hydrogen through aluminum, copper and also tin bronze. Sources of gas contamination are illustrated using corrosive conditions as an example. Various gases, such as sulphur dioxide and the oxide of carbon and sulphur, are presented showing the effect on metals. Six suggestions for minimizing gas unsoundness are brought out in this paper. The article is concluded by calling attention to the general principles involved in the removal of dissolved gases from melts. (G.)

Molding

MAGNESIUM CASTINGS. "Molding and Casting Magnesium," by A. H. Allen, *The Foundry*, vol. 67, No. 8, August, 1939, pp. 18-20, 56, 58. Magnesium, lightest of commercial structural metals, has grown steadily in popularity. Due to its light weight it is found in aircraft parts, portable tools, truck and bus parts and many other numerous uses. This particular article is concerned primarily with the production of magnesium sand castings at the Adrian plant of Magnesium Fabricators, Inc. Magnesium has a few peculiar foundry problems for three reasons: Molten

metal has a high affinity for moisture, molten metal will oxidize or burn rapidly if exposed to the open air; and magnesium dust and fines form a highly combustible mixture with air. To keep the molten metal from burning at the surface it must be covered. A granular compound is used whenever the metal starts to oxidize. Portable grinders give the initial smoothing, and all grinders are operated in conjunction with water-wash dust-collection booths where all grinding dust is entrapped. (Mo.)

Non-Ferrous

ALLOYS. "Many Non-Ferrous Alloys Available," by N. K. B. Patch, *The Foundry*, vol. 67, No. 8, August, 1939, pp. 25, 76 and 79. Small amounts of elements not definitely specified or demanded are found to influence physical characteristics of alloys. This article is related to the effect of aluminum or antimony upon red brasses known as ounce metal. Investigation was made by H. B. Gardner and C. M. Saeger Jr. at the bureau of standards, Washington, D. C. The experiences with this metal shows that the effect varies with composition and how the composition effects hardness. The wide range of properties and hydrostatic pressure resistance are points discussed by the author. (N.F.)

LEAD CASTINGS. "Antimonial Lead Castings—Thin Molding and Finishing," Nathaniel Hall, *Metal Industry (London)*, vol. 54, No. 25, June 23, 1939, pp. 673-674. The author discusses the methods used for molding and finishing castings of the type indicated in the title of the article; particularly to slush castings. He points out that such castings can be plated satisfactorily by first cleaning electrically in a soda ash and trisodium phosphate solution at about 190°F. and rinsed, immersed in a solution of 25% by volume hydrochloric acid solution and finally immersed in a sodium cyanide solution. Following such treatment castings may be gold, silver, copper, chromium, brass or nickel plated. The latter part of the article explains methods used to secure various finishes. (N.F.)

Steel

CASTINGS. "Renaissance of the Steel Casting," by F. A. Melmoth, *The Foundry*, vol. 67, No. 7, July, 1939, pp. 24-26, 74, 77-78, and vol. 67, No. 8, August, 1939, pp. 26-27, 80, 82, 85-86. In the July and August issues appears this year's annual exchange paper of the American Foundrymen's Association to the Institute of British Foundrymen. The paper was presented at the International Foundry Congress held in London, June 12-17. Many men have ventured into the study of steel production, making numerous important discoveries such as importance of slag constitution, deoxidizing procedure on electric and open-hearth furnaces and the significance of inclusions, their degree of occurrence and shape. The use of acid-lined electric furnace is discussed and the author points out the following advantages: it is speedier, life of the furnace is much longer using standard refractories, technique of the process is more easily acquired by untrained labor, and steel is more fluid. The metallurgist has done much to assist in the progress by his realizing the effects of mass, composition and heat-treatment. The toughness and shock resistance of nickel steels, straight carbon-molybdenum steels and chrome-molybdenum steels are discussed by the author. Importance of sand

control and use of synthetic sand mixtures was stressed in this article. The author commented on the American molding methods and attempted to remove the misconception which appears in the minds of Europeans. Throughout the article the author has pointed out what metallurgists have done to benefit the industry and through this knowledge, production and control of major characteristics of steel castings has increased its scope of application. (S.)

Testing

HIGH TEMPERATURE. "The Strength of Metals at Elevated Temperatures," by Richard F. Miller, *Mechanical Engineering*, vol. 61, No. 8, August, 1939, pp. 589-594. Testing laboratories have disagreed many times on creep strength of a steel of a given composition due to the laboratories variation of analysis, grain size and heat-treatment. In view of these facts a safety designer would select the material of a given composition at a given temperature which had the lowest value of creep strength. However, conditions are improving and the variables which must be controlled in the various processes are better understood. Creep strength of similar material tested by various laboratories are very much the same. Failures in parts used under stress at elevated temperature generally occur because of corrosion, excessive local over-heating, or a combination of alternating stresses, corrosion, and creep. Failure due to corrosion generally means that the alloy content of the metal has been too low for the particular application. Excessive local over-heating may be due to an accumulation of reaction product which decreases the rate of heat transfer, or to improper furnace design and flame impingement. Research on the behavior of metals at elevated temperatures has not only shown how to avoid failures, but it has led to the development of new and stronger steels. The creep strength of specimens taken from a single piece of steel can be determined quite accurately and reproducibly as was demonstrated by the cooperative creep tests on carbon steel by A.S.M.E. and A.S.T.M. research committees. Interesting charts and figures are also illustrated in the article. (T.)

Tire Molds

METAL. "Metals and Alloys Used in Making Rubber Tires," Edwin F. Cone, *Metals and Alloys*, Vol. 10, No. 7, July, 1939, pp. 198-202. An article written about the unusual bimetallic molds used in a tire factory. Four types of molds are described showing their specifications and compositions. High sulphur steel casting of 0.09 to 0.12 per cent is used in a mold for the portion forming the side walls of the tires. The reason for a high sulphur content being that a much brighter and smoother surface can be obtained. Aluminum die casting segments are made to form the tread. This alloy was chosen because of its die casting properties and freedom of distortion and growth during the various processes. A large solid ring of aluminum cast in a sand mold to U. S. Navy specification is used by this company for treading large tires. Due to the tread being inside of the ring the mold can be scraped and remelted. Large crude tires are made with a steam jacket mold of cast iron. High grade steel wire of 4, 6, 8 or more strands are made up for use on the inner circumference of the tire to give it stiffness and strength. (A1.)

FUNDAMENTAL FOUNDRY INFORMATION

A Partial List of Available A. F. A. Publications

BOUND VOLUMES OF TRANSACTIONS

Containing a wealth of material in papers and committee reports as presented before annual conventions. At present only 4 of these are available. The supplies are limited, but those which are available are for those most recent conventions when papers and reports have been most numerous and on problems and practices of current importance. These volumes are the foundation of any library of foundry reference books.

Publication No.	Vol.	No. Pages	Price to Members	Price to Non-Members
1	46 (1938)	950	\$3.00	\$15.00
2	45 (1937)	850	3.00	10.00
4	43 (1935)	722	2.00	6.00
5	41 (1933)	608	2.00	6.00

Publication No. 7

Alloy Cast Irons. 200 pp. 6x9, cloth binding (1939).

Price \$3.00. To members \$1.50.

A committee publication, designed to provide foundrymen, purchasers and potential users with comprehensive and authoritative information on the theory, applications, properties and production of alloy cast irons. Sections deal with (1) Metallurgical Theory of Effects of Alloying Elements, (2) Qualitative Effects of Alloys, (3) Quantitative Effects on Properties, (4) White and Chilled Alloy Irons, (5) Heat Treatment, (6) Foundry Practice, (7) Specific Applications, giving analysis, mechanical properties and service results of a wide variety of alloy cast irons used in commercial practice, and (8) Bibliography.

Publication No. 18

Tentative Recommended Good Practice Code and Handbook on Fundamentals of Design, Construction, Operation and Maintenance of Exhaust Systems (1938).

Price \$4.00. To members \$2.00.

Third of a series of codes for the control and abatement of occupational disease. Gives complete engineering information. The exhaust systems are detailed on an engineering basis. Will be useful in the purchase of new equipment or exhaust systems, and in the revision, to make more efficient, present systems. Shows how to do the job intended at a minimum cost. Research work performed in developing this code gives entirely new information and data on resistance losses of friction in straight pipes and elbows. Complete with almost 200 pages, including 35 charts and engineering diagrams. Appendix gives an example of an exhaust system completely worked out, step by step, showing the proper use of all rules and formulae given in text.

Publication No. 8

Recommendations to Buyers of Castings. Committee Report.

6 pp. 6x9 (1931). Price \$0.15 per copy, \$5.00 per 100, \$40.00 per 1000.

Report of Committee on inquiries from consumers of jobbing castings on data required for intelligent estimation of castings costs. Report presented by A.F.A. Cost Committee before 1931 convention. Covers specific recommendations for buyers of gray iron, malleable and non-ferrous castings.

Publication No. 43

Founding of Aluminum Bronze, by J. E. Crown.

8 pp. 6x9 (1936). Price \$0.20. To members \$0.10.

Discusses compositions, melting, practice, molding methods, heading, gating and chilling, compositions and test figures are given.

Publication No. 50

The Microscope in Elementary Cast Iron Metallurgy, by R. M. Allen.

143 pp. 6x9 preprint, 73 illustrations, (1939). Cloth binding. Price \$3.00. To members \$1.50.

A book containing material of lectures presented by the author before 1939 A.F.A. Convention. Designed to meet the needs of the shop man and student in understanding the microstructure of cast iron. Discusses the fundamentals of physical cast iron metallurgy, showing extensive illustration of various types of structures. Outlines effect of forms of graphite, silicon, sulphur, manganese and phosphorus. A chapter is devoted to special cast irons such as white, chilled, malleable, alloy, special duty and heat treated. The chapter on the cast iron equilibrium diagram is easily understood. A major section is a detailed explanation of the microscope and technique of its use, together with the preparations of samples.

Publication No. 56

Symposium on Steel Melting Practice.

84 pp. 6x9 preprint (1939). Heavy paper binding. Price \$1.00. To members \$0.50.

A compilation of six papers presented before the 1939 Convention, covering melting practices in the acid and basic open-hearth, acid and basic electric furnaces, the induction furnace and the converter shops. The basic open-hearth practice is treated by J. W. Porter, American Steel Foundries, the acid open-hearth by W. C. Harris, Birdsboro Steel Foundry & Machine Co., the basic electric furnace by C. W. Briggs, Steel Founders' Society of America, the acid electric furnace by W. Finster, Reading Steel Castings Div., American Chain & Cable Co., and the induction furnace practice by G. F. Landgraf, Lebanon Steel Foundry. This is the first comprehensive survey of Steel Melting Practices in many years and gives much valuable information to anyone interested in this subject.